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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 94

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CONTENTS

ASIA

BANGLADESH

- Delays in Research Reactor Installation Reported
(THE BANGLADESH TIMES, 20 Mar 81) 1

INDIA

- Heavy Water Lack Delays Atomic Power Stations
(Editorial; THE HINDU, 25 Mar 81) 2
- Briefs
Explosion Near Reactor 3
Uranium Deposits Found 3

JAPAN

- MITI Plans Nuclear Safety Checks
(KYODO, 20 Apr 81) 4
- Nuclear Plant Accident Exposes 56 to Radiation
(KYODO, 21 Apr 81) 5
- Seabed Radioactive Contamination Disclosed
(KYODO, 18 Apr 81) 6
- Briefs
Uranium Enrichment Plant 7

LATIN AMERICA

BRAZIL

Government To Stake NUCLEP Costs Until 1984 (Teresinha Costa, Milton F. da Rocha Filho; JORNAL DO BRASIL, 8 Mar 81)	8
Criticism of Nuclear Program Rejected (AFP, 10 Apr 81)	17
Briefs	
Nuclear Pollution Agreement	18

COLOMBIA

Briefs	
Uranium Reserves Reported	19

WEST EUROPE

INTERNATIONAL AFFAIRS

Finnish Power Firm Signs Cooperation Pact With France (HELSINGIN SANOMAT, 22 Jan 81)	20
Briefs	
Finnish-French Nuclear Pact	22

FINLAND

Briefs	
Olkiluoto-2 Suffers Generator Failure	23

GREECE

Briefs	
Ministry Denies Radioactivity Leak Reports	24

SWEDEN

Government, Industry, Environmentalists Restart Nuclear Debate (Editorial, Olle Alsen; DAGENS NYHETER, 22 Mar 81)	25
Planning Agency Sets Conditions for Pleutajokk Uranium Mine (DAGENS NYHETER, 27 Mar 81)	28
Government Wants Filter Chambers for Nuclear Plants (DAGENS NYHETER, 11 Mar 81)	29
Briefs	
Poll on Nuclear Power	30
Local Nuclear Safety Boards	30

DELAYS IN RESEARCH REACTOR INSTALLATION REPORTED

Dacca THE BANGLADESH TIMES in English 20 Mar 81 pp 1, 12

[Text] Savar (Dacca), March 19: Shipment of the research reactor for the Atomic Energy Complex here, about 25 miles north of the capital, will start in phases from next month and is expected to be completed by December this year.

But construction work of the building which will house the 3 Megawatt triga research reactor is yet to start due to shortage of fund.

Stating this to BSS today, the Chairman of the Commission said that delay in installing the reactor will cost the nation around Taka 10 lakh per month. Of this Taka 6 lakh will have to be paid for foreign experts and technicians and the rest indirectly due to delay in research programmes which are dependent on the reactor, he added.

The reactor is being supplied by the General Atomic Company of San Diego Laboratories, the United States, at a cost of about Taka 8 crore.

Dr. R. A. Ghani, State Minister for Science and Technology, who visited the under-construction complex today, however, assured the working scientists that work for the reactor building will start without further delay for which necessary funds will be provided.

Construction on the Taka 70 crore Atomic Energy complex started in 1976 and was a scheduled to be completed by 1985. [as published] The first phase of the work which includes completion of part of the civil constructions, part of the housing colony and installation of part of the ten institutions was scheduled for completion by 1981.

The original cost of the project was Taka 35 crore which has been increased due to cost installation at home and abroad. So far construction of part of the pest control and irradiation research institute, electronics and computer institute, institute of nuclear technology and the institute of nuclear medicine and hospital building has been completed. However, the institute of nuclear medicine has been set up at the P.G. Hospital in Dacca recently though it was originally planned for the Savar complex.

Only the Pest Control and Irradiation Research Institute has been shifted to the new complex and the cobalt 60 gamma irradiation source has been installed.

But it as reported by the scientists that due to irregular power supply the source remained idle most of the time. [as published]

CSO: 5100

HEAVY WATER LACK DELAYS ATOMIC POWER STATIONS

Madras THE HINDU in English 25 Mar 81 p 8

[Editorial]

[Text] The much-delayed Madras atomic power station at Kalpakkam is expected to be commissioned late next year. Dr. H. N. Sethna, Chairman of the Atomic Energy Commission, does not hold out a firm promise but declared that "every effort is being made to provide the necessary heavy water before the middle of next year." Technical problems associated with high-technology projects may have been responsible for repeated postponements over the years of the schedule for Kalpakkam. But at the moment the major obstacle is the lack of availability of the natural uranium reactors' cooling agent which just cannot be bought abroad without a subordination to the inspection rules set out by the superpowers in the nuclear non-proliferation treaty. Each of the 235 mw reactors at Kalpakkam needs an initial charge of 200 tonnes of heavy water and an annual replenishment of 15 tonnes to make up for operational losses. The annual capacity of the plants at Baroda, Tuticorin, Talcher and Kota—plus the small old one at Nangal—could at best add up to 300 tonnes a year. Dr. Sethna talks of an ambitious programme of 10,000 mw of installed nuclear power plants by the end of this century. Such a task, apart from calling for nearly 50 generating sets in the 200 mw range, would require 13,000 tonnes of heavy water because all the reactors proposed to be commissioned during the next two decades will be based on natural uranium.

(The controversial Tarapur will be the only one to use enriched fuel. Fast breeders using thorium are still in the stage of visualisation, and extensive research work has to be undertaken to produce viable equipment. This is a field in which India will have to go it alone, a very big challenge indeed. Except for Kota, the other plants are tied to fertilizer factories and the ammonia-hydrogen exchange process, the knowhow coming from France and West Germany. The technique at Kota was indigenously developed at the Bhabha Atomic Research Centre and is not linked to ammonia from a fertilizer plant. The commissioning of Kota will be a test for Indian technology and will to an extent determine the course to be taken in new plants.

The earnestness of the Government in pushing forward with nuclear plants is of special interest to a State like Tamil Nadu which does not have much hydro-electric potential and

is far away from the coal-mines. More nuclear power is the way to provide stable supply in the South, in addition to the conventional thermal plants. Notwithstanding claims of increased coal raisings in the coalfields of Bihar and West Bengal, the situation has become tricky in the South — a sort of train to boiler condition which is keeping managers of powerhouses on tenterhooks. The Ennore station has managed to go full blast with all sets working, and just at this time a crisis in coal supply threatens to halt it in its tracks. And we come back to the old, old story of the Railways putting the blame on the mines, claiming that there is no coal to carry, while the Energy Minister bluntly tells Parliament of transportation bottlenecks. The consumer is let down; it is a state of affairs which has lasted far too long. What have the monitoring agencies in New Delhi been doing all these days? Have they been warning the Ministers concerned about impending shortfalls in performance?

BRIEFS

EXPLOSION NEAR REACTOR--New Delhi, March 26 (PTI): Mr. Jaswant Singh (BJP) expressed concern in the Rajya Sabha today over the reported explosion close to the nuclear fuel complex near Hyderabad in which 50 persons were injured. Raising the issue through a special mention, Mr. Jaswant Singh said according to the police, the authorities of the nuclear fuel complex were disposing of volatile metal powder at a dumping ground where the explosion occurred. It was serious matter and the government should come forward with a statement on it, the BJP member demanded. [Text] [Bombay THE TIMES OF INDIA in English 27 Mar 81 p 11]

URANIUM DEPOSITS FOUND--Uranium deposits have been found in Madhya Pradesh, Himachal Pradesh, Karnataka and Uttar Pradesh. Giving this information in the Lok Sabha during question time today, Minister of State for Science and Technology C.P.N. Singh said the Uranium Corporation of India has proposals to open three additional uranium mines in Bihar. Two uranium mills are proposed to be set up in addition to the expansion of the existing one at (Jadhukoda). One of the projects known as (Bhatir) mines project has been approved by the government. It is likely to be ready by the end of 1984-85. [Text] [BK150858 Delhi Domestic Service in English 0830 GMT 15 Apr 81]

CSO: 5100/2233

MITI PLANS NUCLEAR SAFETY CHECKS

OW200419 Tokyo KYODO in English 0411 GMT 20 Apr 81

[Text] Tokyo, 20 Apr (KYODO)--International Trade and Industry Minister Rokusuke Tanaka said Monday his ministry would make overall safety checkups of all nuclear power plants now in operation across the country.

Tanaka voiced the intention in answer to interpellation by the opposition at the House of Representatives Audit Committee on the seabed soil contamination by radioactive substances at the Tsuruga nuclear power plant in Tsuruga, Fukui Prefecture. However, he failed to mention whether the checkups would be carried out by halting operation of all 22 nuclear power plant reactors now in operation.

The Science and Technology Agency also revealed radioactive waste water overflowed a sludge storage tank at a radioactive waste disposal facility in the nuclear power plant on March 8.

The agency suggested the overflow accident was suspected as the source of the radioactive contamination of the seabed at the nuclear power plant.

An agency official told the lower house committee the accident was disclosed in the agency's questioning of Japan Atomic Power Co., the operator of the Tsuruga nuclear power plant. He also said the agency would go on questioning the company on its possibly defective control system as well as over defects in facilities and technology at the plant.

At that time of the spill, the company failed to report the accident to the ministry. Local Fukui prefectural officials have found that manholes for the drainage of non-radioactive waste water are inside the radioactive waste disposal facility.

It is suspected that radioactive waste water might have seeped from a storage tank into a manhole and then into the drainage system. Another agency official also said no radioactive substances were detected in fish from Urasoko Bay, which faces the plant, but some cobalt 60 and manganese 54 was detected from mussels and gulfweeds collected from the bay.

CSO: 5100/2233

NUCLEAR PLANT ACCIDENT EXPOSES 56 TO RADIATION

OW210259 Tokyo KYODO in English 0246 GMT 21 Apr 81

[Text] Tokyo, 21 Apr (KYODO)--Fifty-six persons have been exposed to radioactivity in connection with the recent leakage at the Tsuruga nuclear power plant in Fukui Prefecture, it was announced Tuesday. The announcement by the Japan Atomic Power Company was made at the same time as an official investigation began into the leakage incident.

International Trade and Industry Minister Rokusuke Tanaka told reporters after a Cabinet meeting that the government plans to question the top management of Japan Nuclear Power Co for neglecting to report the leak to authorities as it was obliged to do under the power industry law.

Tanaka hinted at resignation en masse of top executives of the utility company to take responsibility. The minister said he would send a representative to inspect the Tsuruga plant.

The announcement by the power company said the maximum amount of radioactivity exposed to the 56 persons totaled 155 milirem, a unit to determine the dosage of radiation. The average amount of radioactivity exposure, it added, amounted to around 10 milirem. It said that two plant employees first received about 6-7 milirem of exposure while removing waste water soon after the leakage occurred on March 8. Six other persons who joined them also were exposed, amounting to a maximum of 13 milirem. The average amount, the announcement said, was about 9 milirem. It said 48 company subcontractors joined in the removing operation between March 9 and April 15, exposing themselves to a maximum of 155 milirem of radioactivity. It added that the average amount was about 3.7 milirem. An expert, however, said the amount of radioactive exposure was not strong enough to cause harm.

The leakage occurred when the plant's staff apparently forgot to shut the valve of the filter sludge tanks in the plant. That subsequently led to the leakage of waste water, which spilled into the general waste water outlet in nearby Urasoko Bay. The staffers and subcontractors were reported to have tried to dispose of the leaked waste water using buckets and wiping the floor with dustcloth, thereby exposing themselves to radioactivity.

CSO: 5100/2233

SEABED RADIOACTIVE CONTAMINATION DISCLOSED

OW180234 Tokyo KYODO in English 0150 GMT 18 Apr 81

[Text] Tokyo, 18 Apr (KYODO)--An enormous amount of cobalt-60 and other man-made radioactive substances have been found in the seabed soil off a nuclear power plant in Tsuruga, south of Fukui, facing the Japan Sea, the Natural Resources and Energy Agency reported Saturday.

In a rare early morning press conference, an agency official said 61-pico-curies of cobalt-60 and 10 pico-curies of manganese-54 were detected per one gram of soil near a water outlet of the plant. The radioactivity detected is considerably higher than the amount usually found naturally in a similar soil sample, the agency said. The radioactivity was discovered during a survey conducted by the Japan Atomic Power Co, operator of the power plant.

The power company reportedly had checked soil samples collected from three points of Urazoko Bay around the plant Friday. Six other samples are still under examination, the agency said. The company made the checks following unofficial information from the Fukui prefectural government that radioactivity was detected in gulfweeds in the seabed of Urazoko Bay. The company confirmed 0.3 pico-curies of cobalt-60, or 10 times more than the normal level, per one gram of gulfweed Thursday.

The outlet is used to drain rainwater and waste water from the office building and has nothing to do with the waste water from the nuclear generator, which may be polluted by radioactivity, the agency said. An agency official said he had no idea of possible sources of the radioactive contamination.

The official said the trace of cobalt-60 in gulfweeds was of low density and held virtually no danger for humans. He said that experts of the agency are to be dispatched to Tsuruga to investigate the case in conjunction with Fukui government officials who started work at 4 a.m. Saturday.

The boiled water reactor Tsuruga nuclear power plant, with a capacity of 357,000 kilowatts, started operation in 1970. The plant has been involved in a total of 31 accidents and other difficulties since then.

The Natural Resources and Energy Agency had ordered it to stop operations on April 1 when the agency became aware of the leakage of radioactive water due to malfunction in the reactor. The company had neglected its duty to report the leakage to the agency and attempted to repair it without consultation with government officials. The plant has been under an over-all safety check, the agency said.

Chief Cabinet Secretary Kiichi Miyazawa told reporters that the government would decide how to deal with the radioactive contamination when the investigation was over. He said the Ministry for International Trade and Industry was to inform the government of the scale and the cause of the suspected radioactive leakage.

CSO: 5100/2233

JAPAN

BRIEFS

URANIUM ENRICHMENT PLANT--Miyazaki, 13 Apr (KYODO)--Asahi Chemical Industry Co of Osaka started work Monday to build a test plant for producing enriching uranium in Hyuga, Miyazaki Prefecture. Work on the plant was originally scheduled to be started during fiscal 1980, which ended last March, but was postponed because of opposition of local residents. The plant, costing some yen 12 billion, is expected to be completed late in September. It will start full-scale operation after 2 years of tests. The plant will produce enriched uranium by the chemical exchange process with ion exchange resin as the medium for use at nuclear power plants. Asahi Chemical officials said it will be the first time in the world that enriched uranium will be turned out under such a process. [Text] [Tokyo KYODO in English 0207 GMT 13 Apr 81 OW]

CSO: 5100/2233

GOVERNMENT TO STAKE NUCLEP COSTS UNTIL 1984

Rio de Janeiro JORNAL DO BRASIL in Portuguese 8 Mar 81 pp 19, 1

[Report by Terezinha Costa and Milton F. da Rocha Filho]

[Text] The NUCLEBRAS Heavy Equipment Corporation (NUCLEP) factory, which was inaugurated on 8 May 1980 and represents an investment of \$230 million--75 percent of which has already been disbursed with the remainder to be spent in 1982--has received only two orders to date and, as the management of NUCLEBRAS itself admits, it will only become a profitable enterprise in 1984, when it is expected to be building four reactors at the same time. Until that time the costs will be staked by the Brazilian Nuclear Corporation (NUCLEBRAS) with federal funds.

When it was inaugurated in a festive ceremony with the presence of President Figueiredo and almost the whole cabinet, NUCLEP began to build equipment for the fourth Brazilian nuclear plant to be installed on the coast of Sao Paulo. But thus far it does not have any contract pertaining to that order but only a letter of intent from NUCLEBRAS. The company has only one contract, and that for nonnuclear equipment: pipes for Brazilian Petroleum Corporation (PETROBRAS) offshore drilling platforms.

"White Elephant"

It is that situation of virtual idleness that causes capital goods sector industrialists to call NUCLEP a "white elephant" and express the constant fear that the state factory will end up entering into their areas of activity, competing directly with private enterprise for capital goods market orders. The industrialists are alert to any action by NUCLEP, recalling the example of USIMEC, controlled by the National Economic Development Bank (BNDE), which offers below-market prices. When complaints are made to the BNDE, its president, Luis Sande, replies that "USIMEC is fighting for survival."

A study conducted by the Brazilian Basic Industry Association (ABDIB) showed that NUCLEP "did not bring anything new to the national capital goods industrial park." That study was not released by ABDIB, which is seeking to maintain good relations with NUCLEP, with which it has established a consultation procedure under which NUCLEP pledges to accept non-nuclear orders only after consultation with ABDIB.

One of the industrialists who is not afraid to mention NUCLEP openly is Giordano Romi of Romi Industries. He tells anyone who wants to listen that "national private enterprise is fully capable of handling market needs. We cannot accept the entry of NUCLEP in areas that private enterprise can handle perfectly well." Another industrialist who believes that it is necessary that NUCLEP stay out of the areas served

by private enterprise is Einar Kok, president of the Brazilian Machinery Industry Association (ABIMAQ). The management of NUCLEP has already sponsored visits by capital goods industrialists to the Itaquai factory and they have been alarmed by what they saw: "A huge installed capacity without anything to do, at least for the time being."

"Implicit Idleness"

The management of NUCLEBRAS refuses to apply the term "idleness" to NUCLEP. It prefers to speak of "availability of machine-hours" and asserts that this "availability" does not stem from a lack of orders but from the pace of the nuclear program itself and its nature. NUCLEP was designed to produce equipment for one nuclear plant every 12 months (being capable of producing for two plants annually with an additional investment of \$23 million). But the timetable of the nuclear program calls for one order every 18 months.

That difference between the capacity of the factory and the rate of orders is described by the director-superintendent of NUCLEP, Alfredo do Amaral Osorio, as "an implicit idleness that we have to sustain in one way or another because we cannot have half a machine." Thus, the factory will be fully occupied only when it will be building four plants at the same time, which should occur by 1984, if further delays do not occur in the nuclear plant program.

Up to that time, NUCLEP will try to "dilute the costs," to use Amaral Osorio's expression, by accepting orders for non-nuclear equipment. He reiterates, however, that the production of that type of equipment is a subsidiary occupation "because NUCLEP's business is nuclear equipment" and he does not see any reason for industrialists of the capital goods private sector to fear competition.

"We are going to operate outside the nuclear area only as subcontractors for private industry and exclusively in areas that private industry cannot take care of," he said.

He asserted that he has already received many inquiries for supplying materials, which he has rejected because they are of no interest to NUCLEP. "NUCLEP has a professional mission from which it will not deviate. We are not interested, for example, in working with thin steel plates. USIMEC is a workshop; we are a factory."

[Question] "But then, why enter the nonnuclear equipment market?"

[Answer] "Because that way we keep men occupied in all lines and there is always a marginal profit that enables us to dilute the costs until the nuclear orders reach the proper rate."

[Question] But will nuclear equipment alone make NUCLEP viable, even with the 6-month lag between the full capacity of the factory and the timetable of the orders?

[Answer] It depends on the price.

[Question] So a certain price has to be established to make a profit? Even if it is a very high price?

[Answer] Of course, we will not charge a ridiculous price. Furthermore, all over the world, there is always a percentage of non-nuclear orders.

[Question] Does that mean that even in developed countries the exclusive production of nuclear equipment does not insure the viability of the factories?

[Answer] No, that is not it. In France, for example, they are building five reactor assemblies per year. Naturally, they do not need to build nonnuclear equipment.

[Question] But it will be some time before NUCLEP has five reactor assemblies to build per year.

[Answer] It is necessary to fit in whatever nonnuclear equipment is possible. The government program is for 18 months and the factory is designed for one reactor assembly every 12 months. This gives us an idle capacity of 30 percent. But we have to go along with that idle capacity.

[Question] Have the delays in the nuclear plant timetables affected NUCLEP? Have they increased the idle capacity?

[Answer] We were not involved in the Angra-II and III nuclear plants. As for the delay of subsequent ones, originally it was envisaged that we would build 70 percent of the equipment in the primary circuit of nuclear plant No. 4. Now it has been decided that we will build 100 percent. In addition, the pressurizer for Angra-III and the accumulators that were supposed to be built in Germany have been transferred to NUCLEP precisely because there have been delays in the projects, and that gave us time to get the orders. That compensates for the general delay in the timetable.

[Question] How about if there are additional delays?

[Answer] Then NUCLEP will be affected. The plan calls for us to build the fourth nuclear plant today; begin the fifth 6 months from now; a little later, the sixth; and a little later still, the seventh; so as to always have four plants going at the same time, so that as we are completing the first one, we are beginning the last one. Today we are working 100,000 man-hours per year. We are supposed to reach 500,000 man-hours. It will be a gradual increase.

[Question] How about if there is a recession?

[Answer] I do not talk about recession. NUCLEP depends essentially on the nuclear program. Since I am convinced that it is irrevocable, irretractable and irreversible, I believe that NUCLEP is going to continue to surmount any difficulties. Last year, 1980, was a difficult year and we survived. NUCLEP will always have to adjust to the pace of the program and it will be lucky if it manages to get non-nuclear jobs to help.

Staking the Risk

While NUCLEP is waiting to enter the fourth year of operation to become profitable, the costs of production of nuclear equipment will be staked by NUCLEBRAS with funds

supplied by the federal government. "which will later be reimbursed inasmuch as the federal government is the principal stockholder of NUCLEBRAS," pointed out the company's management.

The prices of the equipment built by NUCLEP for the first four nuclear plants (the two that will be installed on the coast of Sao Paulo and the two subsequent ones the sites of which have not yet been determined) cannot be established on the basis of their real cost because that "would mean excessively penalizing the purchaser," in this case, the electric power concessionaire that is going to operate the plants, the NUCLEBRAS management explained. Thus, the idea is to charge a price below the original cost with the difference being compensated for by the final plants. "That is a normal practice," the NUCLEBRAS management asserted.

At the present time, NUCLEP is building the heavy components for the fourth Brazilian nuclear plant, known in nuclear jargon as NPP4, that is, Nuclear Power Plant No 4, and pipes for PETROBRAS offshore platforms.

The components for NPP4 are the reactor pressure vessel, four steam generators, one pressurizer, eight accumulators, and the structure of the nucleus. Under construction are the reactor vessel, which began to be built on the day the factory was inaugurated, and the four generators. The other components will begin to be built later because they take less time to build. Since NUCLEP does not yet have a contract for that equipment--only a letter of intent from NUCLEBRAS--it does not know the price that will be charged for them. It has only a reference figure of 300 million marks (about 9 billion cruzeiros). The contract with NUCLEBRAS is to be signed in April.

The company is manufacturing 8,000 tons of pipes for PETROBRAS for offshore platforms to be installed in Campos. In this case it is a subcontractor for FEM-Tenenge and Montreal-Micoperi. The amount of the contract with FEM is 110 million cruzeiros and that with Montreal is 35 million cruzeiros (at May and June 1980 prices, respectively).

According to Alfredo do Amaral Osorio, that order was the result of "an emphatic request by PETROBRAS, which alleged that private enterprise was not meeting its schedules." (PETROBRAS divided among 28 companies the total order of 60,000 tons of steel sheets for bending.) When NUCLEP received the request from PETROBRAS, it consulted ABDIB, according to the terms of the agreement it has with that organization, but it received "evasive replies," according to Amaral Osorio. The time period expired and NUCLEP received the order.

Rust Attacks Angra Sheet Steel

Sao Paulo--Ten million marks' (330 million cruzeiros at current exchange rates) worth of steel sheets are rusting in the yard of Confab Industrial in Sao Certano do Sul. These are sheets made of a special vanadium alloy for production of the containment vessel for Angra-II, the construction of which has been delayed 3 and a half years.

Three private companies, manufacturers of components and equipment, are involved with the Brazilian nuclear program, two of which have not received any orders thus far despite the fact that they signed a protocol with Furnas and the NUCLEBRAS Engineering Corporation (NUCLEN) in 1976.

The only company that has received an order was Confab Industrial, the management of which prefers not to express itself regarding the current situation of its participation in the nuclear program. The industrialists involved in the program, the directors of Bardella, Cobramma and Confab Industrial consider that they will have to sign a new protocol with the NUCLEBRAS Nuclear Plant Construction Corporation (NUCON) which, by presidential decree, is now responsible for the construction of nuclear plants. The protocol they signed in 1976 pertains to commitments with NUCLEN and Furnas.

Those companies invested more than 50 million cruzeiros in training personnel and purchasing technology in order to prepare themselves to handle the nuclear program. Cobramma and Bardella have even failed to include anything pertaining to the production of equipment for the nuclear program in their 1981 budgets. The president of Bardella, Claudio Bardella, does not hide the fact that his company invested in equipping itself for the production of transportation equipment for the program but "we ended up suffering losses inasmuch as to this day we have not received any orders."

National Industry

Before that protocol--which will allow national industry a minimum participation of 30 percent in the Brazilian nuclear program--was signed, there was a lot of discussion. The participation of 30 percent is for the Angra-II and III plants. More companies were interested in participating in the program than the three that signed the protocol. A typical example was that of Villares, which planned to produce the turbines and turbine shafts and even entered into a partnership with Brown Boveri of Switzerland. There was even a fracas in the Rio de Janeiro Country Club in 1976 between Carlos Villares, today vice president of the Villares Group, and directors of NUCLEBRAS.

Other companies that prepared for the nuclear program were the Jaguaré of São Paulo, Romi of Santa Barbara D'Oeste and Dedini of Piracicaba. As of today, none of them have orders for the nuclear program. The Brazilian Machinery Industry Association (ABIMAQ) even conducted a broad study pertaining to the participation of national industry in the nuclear program signed with Germany. However, ABIMAQ's study was relegated to a secondary level by the government. The study originally called for a participation of up to 70 percent by national industry in the program, with responsibility for pumps and special ventilators.

The protocol signed with Bardella, Cobramma and Confab represented the application of a study conducted in the United States by Bechtel Engineering, which indicated that these companies were in a position to exercise excellent quality control in the production of equipment and components for the nuclear plants.

Although the protocol was signed in 1976, thus far, the only result has been the order for the containment vessel to Confab Industrial, which also received the special steel purchased by Furnas in Germany for the production of the Angra-II containment vessel. The steel sheets are in the Confab Industrial yard and must go through a wetting process before they can be utilized.

State Factory Was German Demand

Capital goods sector industrialists assert that it was not necessary to set up NUCLEP to take care of the nuclear program. According to the vice president of ABDIB, Eduardo Uchoa, "95 percent of what NUCLEP does can be done in the other industries without additional investment."

That statement is refuted by the management of NUCLEP and NUCLEBRAS. The director-superintendent of NUCLEP, Alfredo do Amaral Osorio, says that it is exactly the opposite: "It is NUCLEP that makes 95 percent of what is really important. The rest is accessory, it is sharpening tools."

Putting that discussion aside, one concrete fact is that NUCLEP had to be built by demand of the German partners in the nuclear agreement with Brazil. German industry refused to transfer its technology for the manufacture of nuclear components to private companies, according to NUCLEBRAS, because of the risk of the leakage of that technology to companies of third countries.

For that reason, regardless of any readiness of the national private industry to produce the nuclear heavy components, it was necessary to create a state company for that purpose. NUCLEBRAS holds 75 percent of the capital of NUCLEP and the remaining 25 percent is in the hands of the German KWU and GHH and the Austrian VAI companies.

Another reason given by NUCLEBRAS for state-control of the production of nuclear equipment was the need to prevent a single private company from having the monopoly of that technology. "Even if several firms received the know-how, certain suppliers would be in a privileged position and the government would be completely tied to those suppliers. All free competition would end," said a high-ranking NUCLEBRAS official. He pointed out also that the private companies were invited to participate in a minority share of NUCLEP's capital but that they refused for financial reasons (at the time, all companies had their own expansion programs) and because they considered the maturity term of the investment too long.

What NUCLEP Is

The construction of NUCLEP began in 1977 and ended in the first quarter of 1980. It is the heaviest metallic structure in the Southern Hemisphere--there are 11,500 tons of steel--and the largest factory of its kind in the world. It occupies a total area of 85,000 square meters, 40,000 square meters of which are building area, the main building of which has the capacity to raise loads of up to 600 tons.

NUCLEP's equipment, 52 percent of which was nationally supplied, was designed to build nuclear plants of the PWR type of up to 2,000 megawatts of power, although the Brazilian plants are of 1,300 megawatts. Alfredo do Amaral Osorio explains

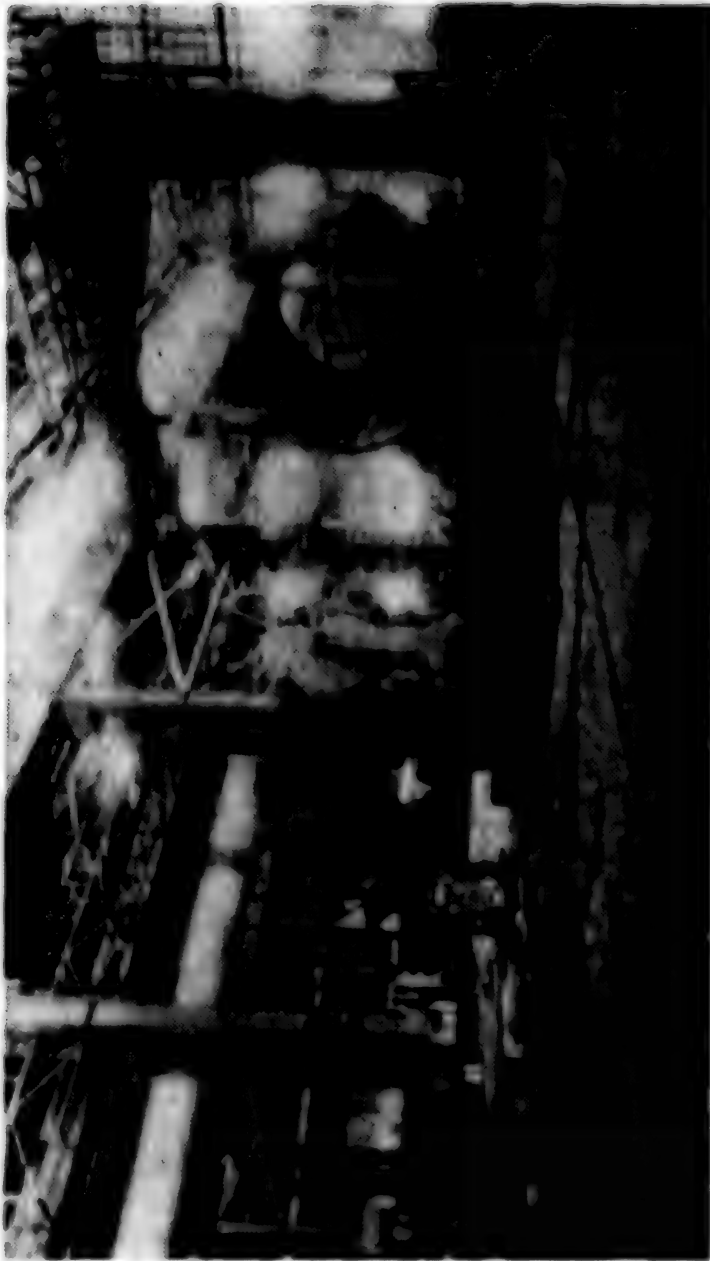
that the factory was planned with that "leeway" because in order to expand it later, it would be necessary to replace all the machinery. The 2,000 megawatt reactors are going to be used commercially by the end of the decade. But NUCLEP's size will enable it to make the vessel for Atucha-2 for Argentina which, because it is of the heavy-water type, is much larger than the largest PWR-type plants.

He summarized what NUCLEP does and what national private industry is not equipped to do: "Private industry does not have buildings with structures capable of lifting the nuclear product (lifting 600 tons, putting it on top of a carrier and moving it to a port terminal; and it does not have machinery capable of bending, welding and machining stainless steel sheets up to 30 centimeters thick.

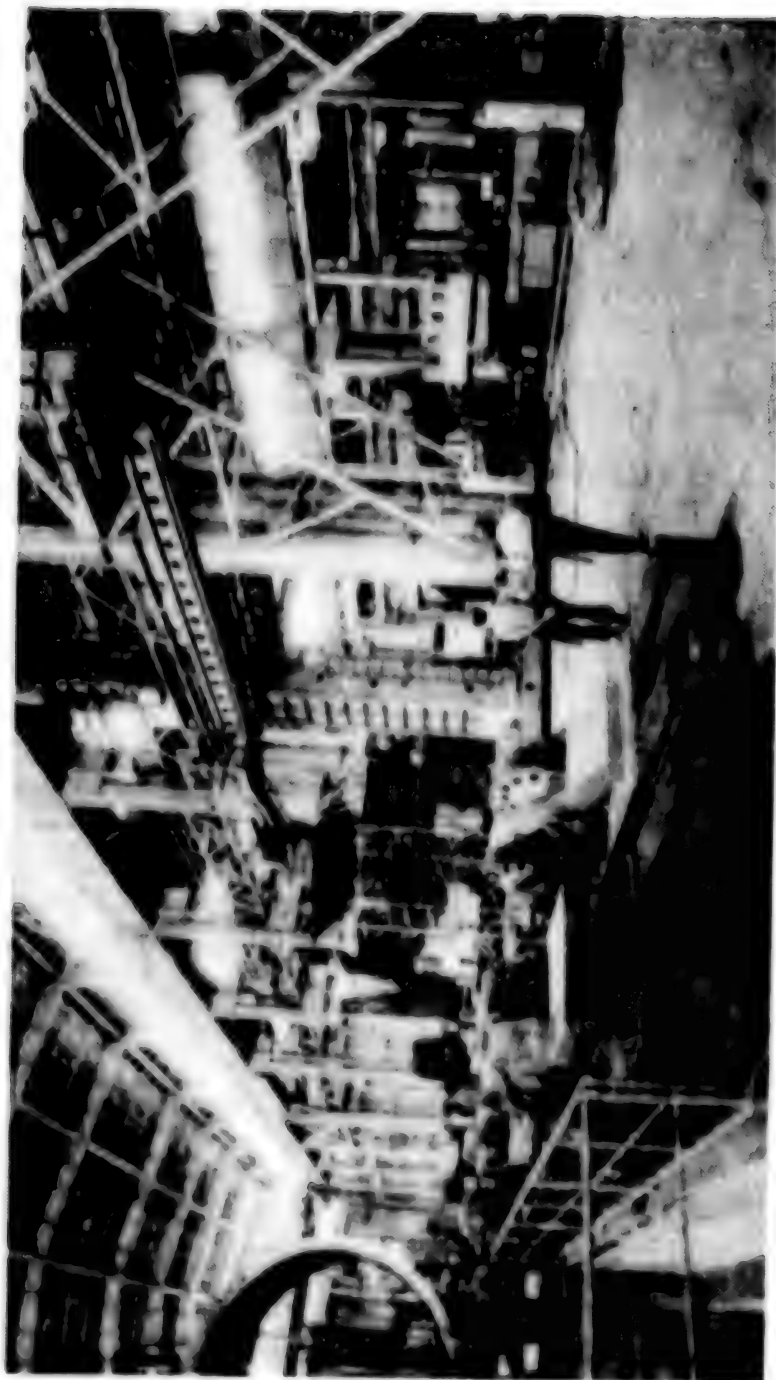
In 1979, even before it began to operate, NUCLEP imported from Japan forged parts for the pressure vessel and the steam generator of NPP4 in the amount of 12.4 million marks. For the subsequent plants, the forgings will be contracted with Vibasa, except for the part for the flange of the pressure vessel which only Japan has and which would be uneconomical to produce here. According to Amaral Onorio, NUCLEP is making an effort to locate Brazilian suppliers in order to avoid the importation of capital goods.

In 1980, no orders were placed in Brazil or abroad. This year, NUCLEP plans to order capital goods in the amount of 13.4 million marks, 2 to 3 percent of which will be placed in Brazil. In 1982, orders will amount to 17.55 million marks, 6 to 8 percent of which will be placed in Brazil. And in 1983, capital goods in the amount of 3 million marks will be ordered, about 10 to 15 percent of which will be purchased in Brazil.

The equipment that only NUCLEP possesses, whether in terms of type or the size required by the nuclear components is as follows: Dorries lathe (6 million marks); mandrel-milling machine (6.3 million marks); sheet chamfer planer 3.3 million marks); deep-borer (3.8 million marks); large hydraulic roller (6.7 million marks); 300-ton turntable for welding (2.3 million marks); domestic hydraulic roller--the largest nationally built type that exists in Brazil (15 million cruzeiros); Braimet annealing oven (31 million cruzeiros); and rolling bridges from Bardella (143 million cruzeiros).



The huge factory in Itaguaí is still waiting for orders that will make it profitable.



NUCLEP is always in a state of idleness watched by its security guards

8711
CSO: 5100/2200

BRAZIL

CRITICISM OF NUCLEAR PROGRAM REJECTED

PY101809 Paris AFP in Spanish 0345 GMT 10 Apr 81

[Text: Belo Horizonte, 9 Apr (AFP)--Brazilian Mines and Energy Minister Cesar Cals today rejected criticism this week by Brazilian experts of the nuclear agreement between Brazil and the FRG, and stated that it will be fulfilled.

In a press conference, Cals stated that in condemning the nuclear agreement signed between Brazil and the FRG on 27 June 1975, Celestino Rodrigues, secretary of the National Energy Commission, expressed his personal opinion, and that the government's opinion is expressed through its ministers.

At the second Brazilian energy congress held last Monday in Rio de Janeiro, Rodrigues and other experts condemned the current Brazilian nuclear program and stated that it should be suspended.

Brazilian politicians and technicians on several occasions expressed their opposition to the Brazilian-FRG nuclear program which foresees all the necessary operations for research, extraction and processing of uranium and the installation of eight nuclear plants with 1,300,000 kw each.

Within the framework of this nuclear plan, a uranium enrichment plant and a nuclear fuel treatment plant will be installed on Brazilian soil within the framework of this agreement.

The first Brazilian nuclear plant, with a U.S.-made Westinghouse reactor, with a capacity to produce 626,000 kw, will begin operations this year in Angra dos Reis, 130 km from Rio de Janeiro.

The two first nuclear plants of a total of eight provided for in the Brazilian-FRG nuclear agreement are being built in the same place.

CNO: 5100/2233

BRAZIL

BRIEFS

NUCLEAR POLLUTION AGREEMENT--Brasília--The National Nuclear Energy Commission (CNEN) and the Environmental Sanitation Technology Company (CETESB) signed an agreement establishing cooperation procedures for the control and prevention of environmental degradation in Sao Paulo stemming from the use of nuclear installations and nuclear electric plants. The agreement provides that the commission and the company will maintain an exchange of information and technical assistance, execute plans jointly, provide services, educate and train personnel, and establish rules and standards for purposes of environmental control pertaining to radioactive pollutants. [Rio de Janeiro O GLOBO in Portuguese 26 Feb 81 p 14]

8711

CSO: 5100

BRIEFS

URANIUM RESERVES REPORTED--Colombia has an exploitable potential of 40,000 tons of uranium, the Nuclear Affairs Institute has reported. Ernesto Villarreal Silva, director of this institute has said that the radioactive deposits are located in the Andean Mountain Range and the eastern plains. He noted that explorations carried out by Minatom, a French firm, and Enusa, a Spanish firm, enabled them to make the estimates in the uranium potential existing in Colombia. However, he noted that it has not been properly exploited because of lack of technology but said that he expected that this will be carried out by 1990. He added that Colombia will have a nuclear reactor by 1994. [PA170011 Bogota Domestic Service in Spanish 1730 GMT 14 Apr 81]

CSO: 5100/2233

FINNISH POWER FIRM SIGNS COOPERATION PACT WITH FRANCE

Helsinki HELSINGIN SANOMAT in Finnish 22 Jan 81 p 26

[Article: "IVO [Imatra Power Company] to Study Feasibility of French Power Station"]

[Text] Loviisa (HS) Imatra Power signed a nuclear power agreement with the French planning company Sofratome last Wednesday.

The agreement aims at establishing the feasibility of a 900 megawatt French power station for Finland by the end of 1982, Imatra Power said.

According to Imatra Power, a new large plant will be needed in Finland by the beginning of the 1990's. The decision on acquiring a plant will be made by the Cabinet. At the same time, solutions based on coal and peat will also be studied.

Imatra Power has already been making preparatory feasibility studies with the Soviet distributor Atomenergoexport. During the next few months attempts will be made to reach the same kind of agreement with the Soviets as with the French, Imatra Power said.

In the feasibility study, questions of financing and possible Finnish participation will be studied, among other things. Environmental and safety studies will also be made as part of the feasibility study.

The agreement signed with the French concerns a type of plant with a little over 900 megawatts net power; 13 of which are in use in France and 19 under construction. Only one of the Soviet 1000 megawatt plants has so far been placed in operation.

The French plant does not differ in basic principles significantly from the present Loviisa plants. It is a pressure vessel plant, made under license from Westinghouse.

According to safety experts in the field of nuclear technology, there will have to be some changes made in the French plant, if one is to built for Finnish conditions.

The French plants have a cylindrical protective structure around the reactor like those in the present Loviisa plants.

As a supplier for the turbine, the Alsthom-Atlantique company, which has previously delivered locomotives to Finland, would probably be given preference.

Sofratome, the partner that signed the agreement with Imatra Power, is a state planning company owned by the French electric company and the French atomic energy commission. The construction company might be the large French atomic-energy enterprise Framatome, for example.

Only One Unit for Finland

The 900 megawatt plants are built in pairs, with two reactor units joined together. But they share a single turbine building. Tricastre's plants have added yet two more pairs. But the Finns will only need one reactor unit. It would be made of the same components as the French pairs, however it would not be a direct copy of them, but a self-contained unit.

According to Imatra Power, one advantage of the French plant is that Finnish and French standards correspond closely to each other.

With the Soviets, on the other hand, adaptations must be made for differing standards. All in all, a feasibility study based on a Soviet solution would require a longer period of time.

9611

CSO: 5100/2168

BRIEFS

FINNISH-FRENCH NUCLEAR PACT--The Industrial Power [company] made an agreement last Friday with the French Comurhex company for chemical treatment of uranium purchased from Australia. This is the first Finnish-French agreement relating to the circulation of nuclear fuels. The agreement with the French company deals with so-called "conversion handling," which is done before concentration. All uranium for TVO [Industrial Power] plants is further concentrated in the Soviet Union, and fuel clusters are made in Sweden. TVO made an agreement last week with the Australian company Queensland Mines Ltd. for delivery of raw uranium for use in the Olkiluoto plants TVO-1 and TVO-2. This uranium will satisfy about half the fuel needs of the Olkiluoto plants in the next few years. TVO's other main supplier is Canada. The uranium obtained from Canada is converted there. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 24 Jan 81 p 29] 9611

CSO: 5100/2168

BRIEFS

OLKILUOTO-2 SUFFERS GENERATOR FAILURE--Turku (HS) Swedish experts began last Sunday to dismantle the damaged generator which had caused Olkiluoto's second plant to be disconnected from the national network. "The shutdown may last for weeks," estimated Jaakko Toppila, head of Olkiluoto's operations office. "There have been problems with the generator before as well. Start-up of plant number 2 was delayed for several months because of that." Changes were already noticed in the pattern of vibrations of the generator at Olkiluoto on Saturday morning, so we started to shut down or disconnect the plant from the national network. "During the shutdown phase, the generator's axle shook unusually hard a couple of times," said Toppila. The generator was cooled until Sunday, and in the early evening the Swedish manufacturers were able to study it. Toppila said that Olkiluoto's second plant has been running superbly since last October. [Text] [Helsinki HELSINGIN SANOMAT in Finnish 22 Jan 81 p 11] 9611

CSO: 5100/2168

GREECE

BRIEFS

MINISTRY DENIES RADIOACTIVITY LEAK REPORTS--The Ministry of Social Services categorically denied yesterday's press reports that leaks of radioactivity had occurred at the X-ray lab of the King Paul (Laikon) Hospital. Many months ago, during the regular check by experts of the "Demokritos" Nuclear Research Center, which are mandatory for all X-ray labs, some very minor defects were discovered, the announcement said. These defects, which never posed the slightest danger to patients, personnel, or nearby residents, were corrected immediately. Since then, no other incidents have occurred. Reports of radioactive leaks are, therefore, totally false. The announcement added that monthly checks for exposure to radioactivity, to which the entire hospital staff is subjected, have always shown levels of absorption of radioactivity far below maximum acceptable levels. Following yesterday's press reports, the announcement added, the Minister of Social Services requested an immediate on-the-spot check by Demokritos experts, which ascertained there was no radioactive leak whatsoever. Minister of Social Services, Mr Doxiades, requested that the press does not rush to report unconfirmed stories which may cause confusion among the public before the ministry or other foundations have had a chance to provide responsible information. [Text] (Athens ATHENS NEWS in English 4 Apr 81 p 4)

CSO: 5100

GOVERNMENT, INDUSTRY, ENVIRONMENTALISTS RESTART NUCLEAR DEBATE

Stockholm DAGENS NYHETER in Swedish 22 Mar 81 p 2

[Editorial by Olle Aasen]

[Text] A year after the referendum, nuclear power plants continue their operations, licensed by the majority of the people. This permission must be accepted but need not be respected. Even many people who did not see it or realize it during the campaign have today come to recognize the fact that the pro-nuclear power group, in many respects, won by using foul means.

A few examples. The pro-nuclear power group grew through division. Line (1) to the hawks, line (2) to the doves. They called a more than doubling of the nuclear power capacity its liquidation. By the aid of far too willing--Åke Sundstrom of the Ministry of Industry prefers to call them corrupt--economists and other experts participating in the so-called study on consequences, and by means of tens of millions of kronor for advertising purposes from private industry, they deluded, frightened, bluffed or misled people in good faith into believing:

That it would cost 75 billion kronor to liquidate the nuclear power industry (what will it then not cost to liquidate more than twice the capacity?)

That power shortage and/or sharp price increases would be imminent around 1990 (a worse threat would be having subsequently to eliminate, respectively replace, the inflated nuclear power capacity by lots of coal power).

That the industries would wither away because of power shortage (according to the present calculations by the Industrial Board, as of 1990 and later the total industrial power needs will, on the contrary, be more or less of the same magnitude as calculated by the anti-nuclear power group in connection with the campaign prior to the referendum, and for which the group was treated with scorn.

And that, by doubling the electric heat production, we would be able to save a lot of oil.

A subsequent study has shown that 80 percent of the voters had entirely unrealistic ideas as to whether it would be feasible to replace more than approximately one-fifth of our oil consumption by electric heat. I wonder who, over the years, gave them these wrong ideas and why? Indeed, the nuclear power parties, the energy commission, the people carrying out the study of consequences and the people campaigning for the pro-nuclear power group. It was by means of this and because of the oil price shocks in 1974 and 1979 that the majority of the Swedish population was lured into believing that we may escape our heavy dependence on oil by becoming dependent on the dangerous nuclear power.

The referendum solved a political and psychological dilemma. Without it, the three non-Socialist parties would not have been able to govern together again, even with majority, and without it the public opinion would have been poisoned if, as was planned, the 12-reactor program had been forced through the Riksdag as if the Three Mile Island catastrophe at Harrisburg had not happened.

However, the referendum did not solve the other problems in connection with nuclear power, although many people seemed to think so. Its obscure economy has not become much clearer or better. Nor its safety--the new so-called Filter Chamber project, a filter chamber which is to reduce the radiation after such a serious reactor accident which cannot happen before it has happened, will, at best, be installed at Barseback in 1985, at the other nuclear power plants much later. The safest thing would, of course, be to close down Barseback instead of providing it with such cosmetic safety devices which will not even help Scania-Copenhagen in case of extensive melting of the core--see, for example, nuclear power advocate, Professor Torbjorn Westermarck's study on this in connection with the reactor safety study.

And the nuclear waste problem remains equally unsolved as when the Liberal Party government in 1979 stated that the terms and conditions of the Nuclear Power Plant Act governing the operation of nuclear power plants had been fulfilled, while ignoring the negative reply from seven out of the eight experts on geology whom the government had summoned to find out if the Swedish underground rock would be suitable for an "absolutely safe" permanent storage of processed nuclear fuel.

No, the problems remain more unsolved than ever. Since then, the processing plant at la Hague, for example, has experienced new serious leakages, a fire which spread radioactivity, constant technical problems, and a 50-percent reduction of the expected additional capacity.

In addition, the "secret" processing agreement has been exposed--it has been locked up in, and banned to, a safe at the Swedish Broadcasting Corporation--and it has turned out that the French Cogema is not at all obligated to cover the waste with glass (which is the condition for the planned Swedish permanent repository). Nobody actually believes any longer, the government is merely pretending not to give the show away, that we shall have our fuel processed and buried 500 meters into a Swedish mountain, and nobody presumably knows either what we are to do with the plutonium which would be extracted during the reprocessing of the spent nuclear fuel.

But if the KBS-1 method for reprocessing cannot be employed even if it need be good for only a number of thousand years, what then about the alternative KBS-2 method, involving the eventual burial of the entire fuel--plutonium and the rest? The method need be good for approximately half a million years. A "rather inconvenient" method, says Professor of Reactor Physics Karl-Erik Larsson on behalf of the Technical University in one of the programs on nuclear waste problems in Brazil, Japan, the United States and Sweden, produced by the Sundsvall editors of environmental issues (and which program, at least for once, needed not be broadcast at 6.10 a.m., a time which probably was otherwise chosen in order not to make people worried.

The situation is becoming gloomy to nuclear power, despite the referendum. The nuclear power expansion in the world is rapidly shrinking, today it is expected to become less than one-fourth of what the OECD predicted a few years ago. Nuclear power is becoming expensive, is unsafe, encourages terrorism, and increases risks of sabotage--as in Spain and France--and maximum surveillance, police state methods, its future is frail, and it is forever connected with nuclear arms. Only Sweden, it may seem, has still got the same confidence in nuclear power, and is not cutting its reactor programs.

The reborn Anti-Nuclear Power Popular Campaign, which arranged eloquent demonstrations yesterday, has managed to rid itself of its debts from the campaign prior to the referendum, thanks to a 200 kroner contribution by thousands of its members. When and how are the nuclear power advocates to get out of their debt?

7262
CSOJ 5100

PLANNING AGENCY SETS CONDITIONS FOR PLEUTAJOKK URANIUM MINE

Stockholm DAGENS NYHETER in Swedish 27 Mar 81 p 10

[Text] The National Board of Physical Planning and Building grants the LKAB [Swedish Mining Company] application to start a uranium mine in Pleutajokk in a report that was completed on Thursday.

The planning agency sets aside a series of important questions connected with uranium mining, referring to the fact that they are not within the planning agency's jurisdiction. Their efforts are concentrated on matters that affect the external environment and pure planning matters.

Within this limited area the planning agency sets up five conditions that have to be met in order for the mining to be permitted. The five conditions are:

--Careful control of discharge into the environment in both the short and long term. The planning agency believes that LKAB has very poorly outlined what will happen once the mining has ceased.

--A special plan has to be developed for the restoration of open mines and dumping areas. The plan has to be finished by 1982. Also here the planning agency thinks that the LKAB application is very sketchy.

--An area plan for the entire Pleutajokk area has to be developed. Among other things the planning agency is missing the information for how boulder areas will be handled, how the road to the plant will be drawn up and how two mountains in the area will be protected.

--Buildings, leaching residue dumpings, etc must be taken care of so that they disturb the landscape as little as possible.

--Finally the planning agency emphasizes that LKAB has to get along with the Laplanders of the area in order to avoid harming the reindeer. The proposal is unclear also in this area.

"Turn down the LKAB application for uranium mining in Pleutajokk. Neither the labor market nor the uranium resources is sufficient reason for the mine. Strong conservational and environmental reasons speak against the mining."

This is claimed by the local opposition organization Arjeplogare against Pleutajokk in their statement of opinion to the government. Instead of a uranium mine the municipality should invest in forest resources, peat moss and other local resources.

9662

CSO: 5100/2210

SWEDEN

GOVERNMENT WANTS FILTER CHAMBERS FOR NUCLEAR PLANTS

Stockholm DAGENS NYHETER in Swedish 11 Mar 81 p 34

[Text] It will cost about 0.5 billion kronor to provide nuclear power plants with the so-called filter chambers in order to reduce the risk of radioactive fallout in case of accidents. The government wants such filter chambers to be built at Barseback by 1985 and at Ringhals, Oskarhamn, and Forsmark by 1989.

An initial report on the filter chambers was submitted last Tuesday to the National Swedish Nuclear Power Inspection Board (the SKI). The report had been prepared by experts of the nuclear power companies, ASEA-Atom, Studsvik Energy Technology and the SKI. The study will go on for another 2 years and is expected to cost 27 million kronor.

Sweden will be the first country in the world to have this type of protection against radioactive fallout. The reasons for it are the debate on the risks of nuclear power and the accident at Harrisburg.

The study is concerned with ways of constructing filter chambers so as not to affect other safety systems and to give the best safety effect.

The experts state that more knowledge will be needed on different kinds of reactor accidents before they will be able to determine the final design. They plan to acquire such knowledge in the course of their further investigations.

7262
CSO: 5100

BRIEFS

POLL ON NUCLEAR POWER--Every other Swede wants the use of nuclear power to be discontinued within a shorter period of time than the scheduled period of 25 years. This appears from a poll taken by SIFO [the Swedish Institute of Public Opinion Research] at the request of VECKANS AFFARER. A total of 780 people were interviewed. Of those asked, 48 percent said that the "nuclear power plant liquidation period" must be shorter than 25 years, 27 percent wanted it to be 25 years, and 15 percent wanted nuclear power longer than 25 years. If a referendum were to be taken today, the results would be more or less the same as the results of the referendum in March of last year. Today, line (1) gets 21 percent (18.9 percent on 1 March 1980), line (2) gets 37 percent (39.1 percent), and line (3) gets 35 percent (38.7 percent). [Text] [Stockholm DAGENS NYHETER in Swedish 11 Mar 81 p 34]

LOCAL NUCLEAR SAFETY BOARDS--Only municipal politicians will become members of the local nuclear safety boards. This was decided by the four municipalities concerned, Varberg, Kavlinge, Oskarshamn and Osthhammar. The government will have to act in accordance with that decision since any other composition will be difficult to carry through from an administrative point of view. The local nuclear safety board at the Ringhals nuclear power plant will be the first one to be set up. The government has received proposals regarding its composition from the Varberg local government board. The members proposed sit on that board. The act governing local nuclear safety boards took effect on 1 February. According to its provisions, nuclear power plants shall permit local nuclear safety boards to inspect safety measures taken in connection with the reactors. [Text] [Stockholm SVENSKA DAGBLADET in Swedish 18 Mar 81 p 9]

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